REMARKS

I. Introduction

With the addition of claims 19 to 21, claims 10 to 21 are pending in the present application. In view of the foregoing amendments and the following remarks, it is respectfully submitted that all of the presently pending claims are allowable, and reconsideration is respectfully requested.

Applicants note with appreciation the acknowledgment of the claim for foreign priority. The Office Action Summary, however, indicates that a certified copy of the priority document has not been received. The present application is a national stage application based on PCT International Application No. PCT/DE99/04018. Accordingly, a copy of a certified copy of the priority document sent to the United States Patent and Trademark Office from the International Bureau is acceptable to establish that Applicants have filed a certified copy of the priority document. See M.P.E.P. § 1893.03(c). It is believed and respectfully submitted that the United States Patent and Trademark Office has received from the International Bureau a copy of the certified copy of the priority document as indicated in the "Notification of Missing Requirements Under 35 U.S.C. 371 in the United States Designated/Elected Office (DO/EO/US)" dated July 30, 2001. Accordingly, Applicants respectfully request that the Examiner acknowledge receipt of the copy of the certified copy of the priority document with the next Office communication.

Applicants thank the Examiner for considering the previously filed Information Disclosure Statements, PTO-1440 papers and cited references.

II. Objection to Claim 10

Claim 10 was objected to due to an informality. Applicants submit that claim 10, as amended herein without prejudice, overcomes the objection. Therefore, withdrawal of the objection to claim 10 and allowance of claim 10 is respectfully requested.

III. Rejection of Claims 10 to 18 Under 35 U.S.C. § 103(a)

Claims 10 to 18 were rejected under 35 U.S.C. 103(a) as obvious over U.S. Patent No. 6,207,522 ("Hunt et al."). Applicants respectfully submit that claims 10 to 18 are allowable for at least the following reasons.

Claim 10 relates to a method for producing a thermal barrier coating for a component of an internal-combustion engine, the component being exposed to hot gases and the thermal barrier coating having a columnar structure. Claim 10 recites the step of providing acetylacetonates of zirconium and at least one stabilizing element selected from the group consisting of alkaline earth metals and rare earths as starting substances. Claim 10 further recites the step of vaporizing the starting substances by heating to at most 250°C so as to form coating gases. Claim 10 further recites the step of transporting the coating gases in an admission system that has been heated to at most 250°C to the component. Claim 10 further recites the step of depositing the thermal barrier coating having a layer thickness between 25 µm and 1000 µm by heating a surface of the component to be coated at a deposition temperature between 300°C and 1100°C at a process pressure of between 0.5 mbar and 50 mbar so that the coating gases are broken down.

Hunt et al. purportedly relate to thin layer capacitors having combustion chemical vapor deposited coatings. See Abstract. Hunt et al. state that a transport solution is formed at a first selected temperature and a first selected pressure. See col. 7, lines 1 to 10. At some time prior to the actual deposition, Hunt et al. state that the substrate is positioned in a region having a second selected pressure which can be ambient pressure and is generally above 20 torr. See col. 7, lines 13 to 14. The transport solution is then stated to be pressurized to a third selected pressure above the second selected pressure using a pressure regulating means. See col. 7, lines 14 to 16. Next, the pressurized transport solution is stated to be directed to a fluid conduit having an input end and an opposed output end having a temperature regulating means positioned thereon for regulating the temperature of the solution at the output end. See col. 7, lines 19 to 23. Thereafter, the solution is stated to be heated using the temperature regulating means to a second selected temperature within 50 degrees above or below the critical temperature, T_c, of the solution while maintaining the third selected pressure above the second selected pressure and above the corresponding liquidus or critical pressure, P_c, of the solution at the second selected temperature using the pressure regulating means. See col. 7, lines 29 to 35. Then, the pressurized heated solution is stated to be directed through the outlet port of the conduit into the region to produce a nebulized solution spray in the direction of the substrate. See col. 7, lines 36 to 38. As the solution is directed into the region, one or more selected gases are

stated to be admixed into the nebulized solution spray to form a reactable spray and, thereafter, this reactable spray is stated to be exposed to an energy source, such as a flame, at a selected energization point. See col. 7, lines 38 to 42 and col. 9, lines 44 to 45. The energy source is stated to provide sufficient energy to react the reactable spray (which contains the one or more reagents of the transport solutions) thereby forming the material and coating the substrate therewith. See col. 7, lines 42 to 45.

Nowhere do Hunt et al. disclose, or even suggest, the steps of vaporizing the starting substances by heating it to at most 250°C so as to form coating gases, transporting the coating gases in an admission system that has been heated to at most 250°C to the component, and heating a surface of the component to be coated at a deposition temperature between 300°C and 1100°C at a process pressure of between 0.5 mbar and 50 mbar so that the coating gases are broken down, as recited in claim 10. Therefore, Hunt et al. do not disclose, or even suggest, all of the limitations of claim 10.

In rejecting a claim under 35 U.S.C. § 103(a), the Examiner bears the initial burden of presenting a prima facie case of obviousness. In re Rijckaert, 9 F.3d 1531, 1532, 28 U.S.P.Q.2d 1955, 1956 (Fed. Cir. 1993). To establish prima facie obviousness, three criteria must be satisfied. First, there must be some suggestion or motivation to modify or combine reference teachings. In re Fine, 837 F.2d 1071, 5 U.S.P.Q.2d 1596 (Fed. Cir. 1988). This teaching or suggestion to make the claimed combination must be found in the prior art and not based on the application disclosure. In re Vaeck, 947 F.2d 488, 20 U.S.P.Q.2d 1438 (Fed. Cir. 1991). Second, there must be a reasonable expectation of success. In re Merck & Co., Inc., 800 F.2d 1091, 231 U.S.P.Q. 375 (Fed. Cir. 1986). Third, the prior art reference(s) must teach or suggest all of the claim limitations. In re Royka, 490 F.2d 981, 180 U.S.P.Q. 580 (C.C.P.A. 1974). As indicated above, nowhere do Hunt et al. disclose, or even suggest, the steps of vaporizing the starting substances by heating it to at most 250°C so as to form coating gases, transporting the coating gases in an admission system that has been heated to at most 250°C to the component, and heating a surface of the component to be coating at a deposition temperature between 300°C and 1100°C at a process pressure of between 0.5 mbar and 50 mbar so that the coating gases are broken down, as recited in claim 10. Indeed, the Office Action admits that Hunt et al. fail to disclose "the claimed

temperature, thickness, and pressure." Office Action at p. 3. Therefore, it is respectfully submitted that Hunt et al. do not render obvious claim 10.

The Office Action alleges, however, that "[i]t is well known in the art that temperature, thickness, and pressure are conventionally varied in routing experimentation." Office Action at p. 3. Applicants respectfully traverse this contention to the extent that it is maintained and request that the Examiner provide specific evidence to establish those assertions and/or contentions under 37 C.F.R. § 1.104(d)(2) or otherwise. In particular, it is respectfully requested that the Examiner provide an affidavit and/or that the Examiner provide published information concerning these assertions. This is because this rejection is apparently being based on assertions that draw on facts within the personal knowledge of the Examiner, since no support was provided for these otherwise conclusory and unsupported assertions. (See M.P.E.P. § 2144.03).

Moreover, judicial or official notice that is based on subjective and unsupported reasoning will not sustain an obviousness rejection. In the M.P.E.P. cited case of In re Ahlert, 165 U.S.P.Q. 418, 420-21 (C.C.P.A. 1970), the Court made plain that:

> Assertions of technical facts in areas of esoteric technology must always be supported by citation to some reference work recognized as standard in the pertinent art and the appellant given, in the Patent Office, the opportunity to challenge the correctness of the assertion or the notoriety or repute of the cited reference. **Allegations concerning specific "knowledge" of the prior art, which might be peculiar to a particular art should also be supported and the appellant similarly given the opportunity to make a challenge.**

In re Ahlert, 165 U.S.P.Q. at 420 to 421 (citations omitted).

Otherwise, if the Examiner cannot provide either references or an affidavit to support these contentions, it is respectfully requested that the rejections of the claims under 35 U.S.C. § 103 be withdrawn for this reason alone.

The Office Action further alleges that "[i]t would have been obvious to one having ordinary skill in the art to have determined the optimum value of a cause effective variable through routine experimentation in the absence of a showing of criticality." Office Action at p. 3. However, a particular parameter must first be recognized as a result-effective variable, i.e., a variable which achieves a recognized result, before the determination of the optimum or workable ranges of such variable

might be characterized as routine experimentation. In re Antonie, 559 F.2d 618, 195 U.S.P.Q. 6 (C.C.P.A. 1977).

Notwithstanding the above, Applicants submit that one skilled in the art would not rely on the teachings of Hunt et al. as the basis for producing thermal barrier coatings. As indicated above, Hunt et al. disclose a method for applying thin dielectric layers as capacitors for the use in electric circuits. No suggestion of thermal barrier coatings can be inferred from Hunt et al. Further, in microelectronics dielectric coatings as capacitors must be designed to be especially thin due to the electrical voltage. This design requirement runs counter to the column-like structure (open) of the thermal barrier coating produced via the method of claim 10. See Figures 1 and 2 and the Specification, for example, at p. 5, lines 34 to 37. Accordingly, one skilled in the art would not rely on the teachings of Hunt et al. as the basis for producing thermal barrier coatings and, therefore, would not arrive at the method as claimed in claims 10 to 18 by "routine experimentation," as alleged by the Office Action. Office Action at p. 3.

Moreover, it is respectfully submitted that the cases of In re Fine, supra, and In re Jones, 21 U.S.P.Q.2d 1941 (Fed. Cir. 1992), make plain that the Office Action's generalized assertions that it would have been obvious to modify or combine Hunt et al. do not properly support a § 103 rejection. It is respectfully submitted that those cases make plain that the Office Action reflects a subjective "obvious to try" standard, and therefore does not reflect the proper evidence to support an obviousness rejection based on the references relied upon. In particular, the Court in the case of In re Fine stated that:

> The PTO has the burden under section 103 to establish a *prima facie* case of obviousness. It can satisfy this burden only by showing some objective teaching in the prior art or that knowledge generally available to one of ordinary skill in the art would lead that individual to combine the relevant teachings of the references. This it has not done. . . .
>
> **Instead, the Examiner relies on hindsight in reaching his obviousness determination. . . . One cannot use hindsight reconstruction to pick and choose among isolated disclosures in the prior art to deprecate the claimed invention.**

In re Fine, 5 U.S.P.Q.2d at 1598 to 1600 (citations omitted; italics in original; emphasis added). Likewise, the Court in the case of In re Jones stated that:

> Before the PTO may combine the disclosures of two or more prior art references in order to establish *prima facie* obviousness, there must be some suggestion for doing so, found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. . . .
>
> **Conspicuously missing from this record is any evidence, other than the PTO's speculation (if it be called evidence) that one of ordinary skill . . . would have been motivated to make the modifications . . . necessary to arrive at the claimed [invention].**

In re Jones, 21 U.S.P.Q.2d at 1943, 1944 (citations omitted; italics in original).

That is exactly the case here since it is believed and respectfully submitted that the present Office Action offers no evidence whatsoever, but only conclusory hindsight, reconstruction and speculation, which these cases have indicated does not constitute evidence that will support a proper obviousness finding.

Applicants respectfully submit that Hunt et al. do not disclose the step of heating a surface of the component to be coated, let alone heating the surface of the component to be coated to a temperature between 300 °C and 1100 °C , as recited in claim 10. In this regard the Specification states that "organometal complexes, which are derived from diketones, of zirconium and at least one stabilising element selected from the group consisting of the alkaline earth metals or rare earths are provided as starting substances, since with these components the coating gases are completely broken down or burnt when they come into contact with that surface of the component which has been heated to deposition temperature." See Specification at p. 3. Further, the Specification states that in order to suppress the vapor phase reactions of the coating gases, which are possible at elevated temperatures, the coating gases are kept below a temperature of 250 °C and the thermal barrier coating is produced or deposited at relatively low process pressures of .5 to 50 mbar, so that they have a short residence time in the hot zones around the rotor blades which have been heated to deposition temperatures. See Specification at p. 6. Hunt et al. do not disclose, or even suggest, heating the component to be coated. Rather, Hunt et al. merely state that an energy source 170 at a selected energy point 172 comprises an ignition point or

a plasma torch and is used to ignite the nebulized solution spray directed at the component to be coated. See col. 9, lines 44 to 56.

In view of all of the foregoing, it is respectfully submitted that Hunt et al. do not render obvious claim 10. Therefore, withdrawal of the 35 U.S.C. §103(a) rejection and allowance of claim 10 are respectfully requested.

As for claims 11 to 18, which ultimately depend on claim 10 and therefore include all of the limitations of claim 10, Applicants respectfully submit that these dependent claims are allowable for at least the same reasons provided above in support of the patentability of claim 10. In re Fine, supra (any dependent claim that depends from a non-obvious independent claim is non-obvious).

Therefore, withdrawal of the 35 U.S.C. §103(a) rejection and allowance of claims 11 to 18 are respectfully requested.

IV. New Claims 19 to 21

New claims 19 to 21 have been added herein. It is respectfully submitted that new claims 19 to 21 do not add any new matter and are fully supported by the present application, including the Specification. Because claims 19 to 21 include features analogous to the features recited in claims 10 to 18 it is respectfully submitted that claims 19 to 21 are allowable for similar reasons to those given above in support of the patentability of claims 10 to 18. Additionally, with respect to claim 19, Applicants submit that Hunt et al. do not disclose, or even suggest, the at least one stabilizing element includes at least one of beryllium, magnesium, calcium, strontium, barium, radium, cerium, praseodymium, neodymium, promethium, samarium, europium, gadolinium, terbium, dysprosium, holmium, erbium, thulium, ytterbium, lutetium, actinium, thorium, protactinium, uranium, neptunium, plutonium, americium, curium, berkelium californium, einsteinium, fermium, mendelevium, nobelium, and lawrencium. Additionally, with respect to claim 21, Applicants submit that Hunt et al. do not disclose that the starting substances at least one of break down and burn upon contact with the heated component. It is therefore respectfully submitted that claims 19 to 21 are allowable.

V. Conclusion

Applicants respectfully submit that all of the pending claims of the present application are now in condition for allowance. Prompt reconsideration and allowance of the present application are therefore earnestly solicited.

Respectfully submitted,

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